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**Jay et al.**

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(54) **ASSOCIATING USER ACCOUNTS WITH SOURCE IDENTIFIERS**

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***G06Q 20/40*** (2012.01)

(52) **U.S. Cl.**
CPC ..... ***G06F 17/30705*** (2013.01); ***G06Q 20/40*** (2013.01); *G06F 17/30286* (2013.01)

(58) **Field of Classification Search**
CPC ..... G06F 17/30286; G06F 21/552; G06F 17/30705; G06Q 20/40
USPC ..... 707/737; 705/1.1
See application file for complete search history.

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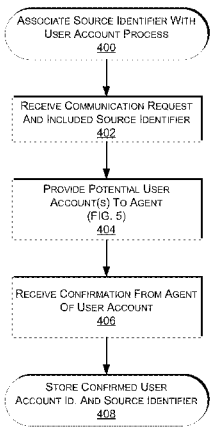
(74) *Attorney, Agent, or Firm* — Athorus, PLLC

(57) **ABSTRACT**

This disclosure describes a system for associating user accounts with source identifiers included in communication requests received from users of those user accounts and using that information to later identify potential user accounts. For example, when a user contacts a support network, such as a call center, the source identifier (e.g., telephone number) may be identified. Once the user initiating the communication request is verified and the corresponding user account identified, the source identifier may be associated with the identified user account. By establishing and storing a relationship between the source identifier and the verified user account, if the user later again initiates a communication request that includes the same source identifier, that user's user account may be quickly identified to the agent, thereby simplifying verification.

**21 Claims, 7 Drawing Sheets**



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2011/0283347 A1* 11/2011 Bhuta ..... H04L 63/0807 726/9
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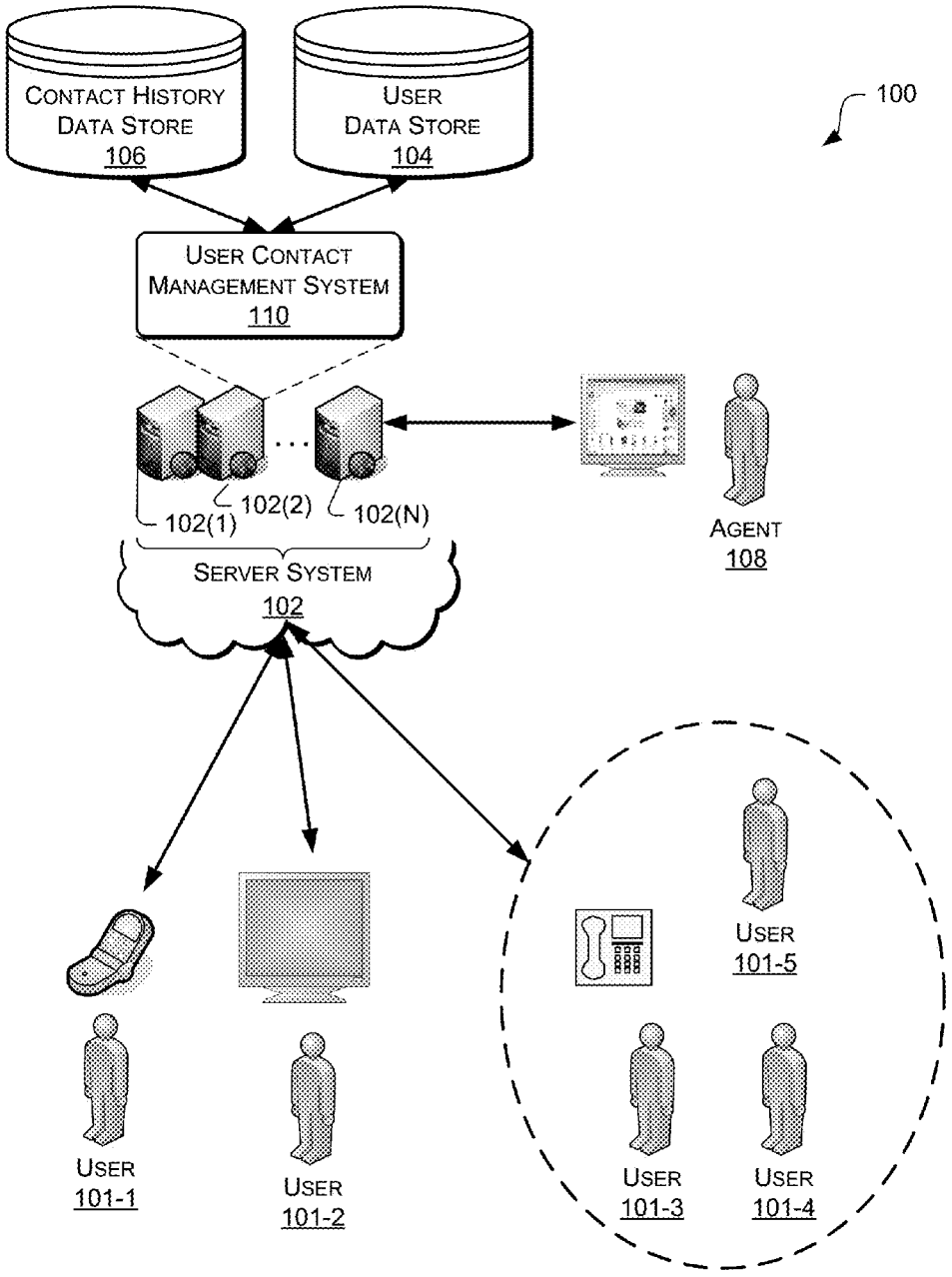
CONTACT HISTORY DATA STORE 106
USER DATA STORE 104
100
USER CONTACT MANAGEMENT SYSTEM 110
102(1)
102(2)
102(N)
SERVER SYSTEM 102
AGENT 108
USER 101-1
USER 101-2
USER 101-3
USER 101-4
USER 101-5

FIG. 1

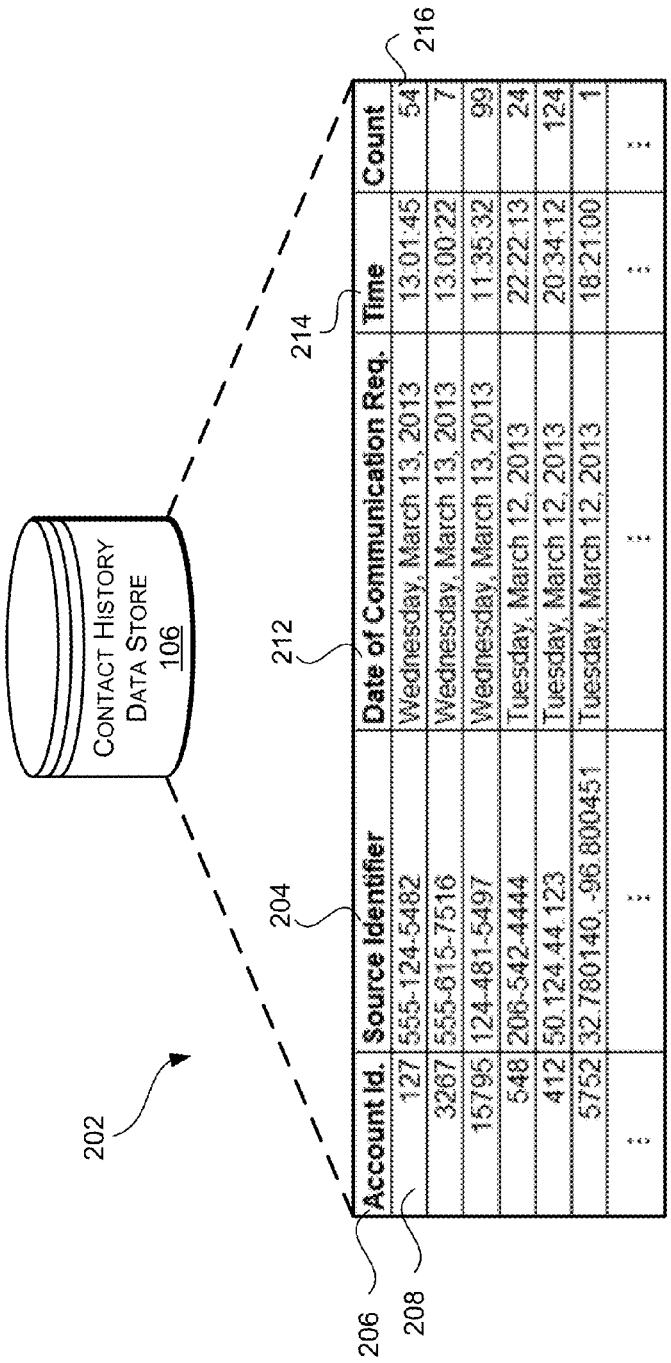
CONTACT HISTORY DATA STORE 106
202
204
206
208
212
214
216
Account Id.
Source Identifier
Date of Communication Req.
Time
Count
127
555-124-5482
Wednesday, March 13, 2013
13:01:45
54
3267
555-615-7516
Wednesday, March 13, 2013
13:00:22
7
15795
124-481-5497
Wednesday, March 13, 2013
11:35:32
99
548
206-542-4444
Tuesday, March 12, 2013
22:22:13
24
412
50.124.44.123
Tuesday, March 12, 2013
20:34:12
124
5752
32.780140, -96.800451
Tuesday, March 12, 2013
18:21:00
1

FIG. 2

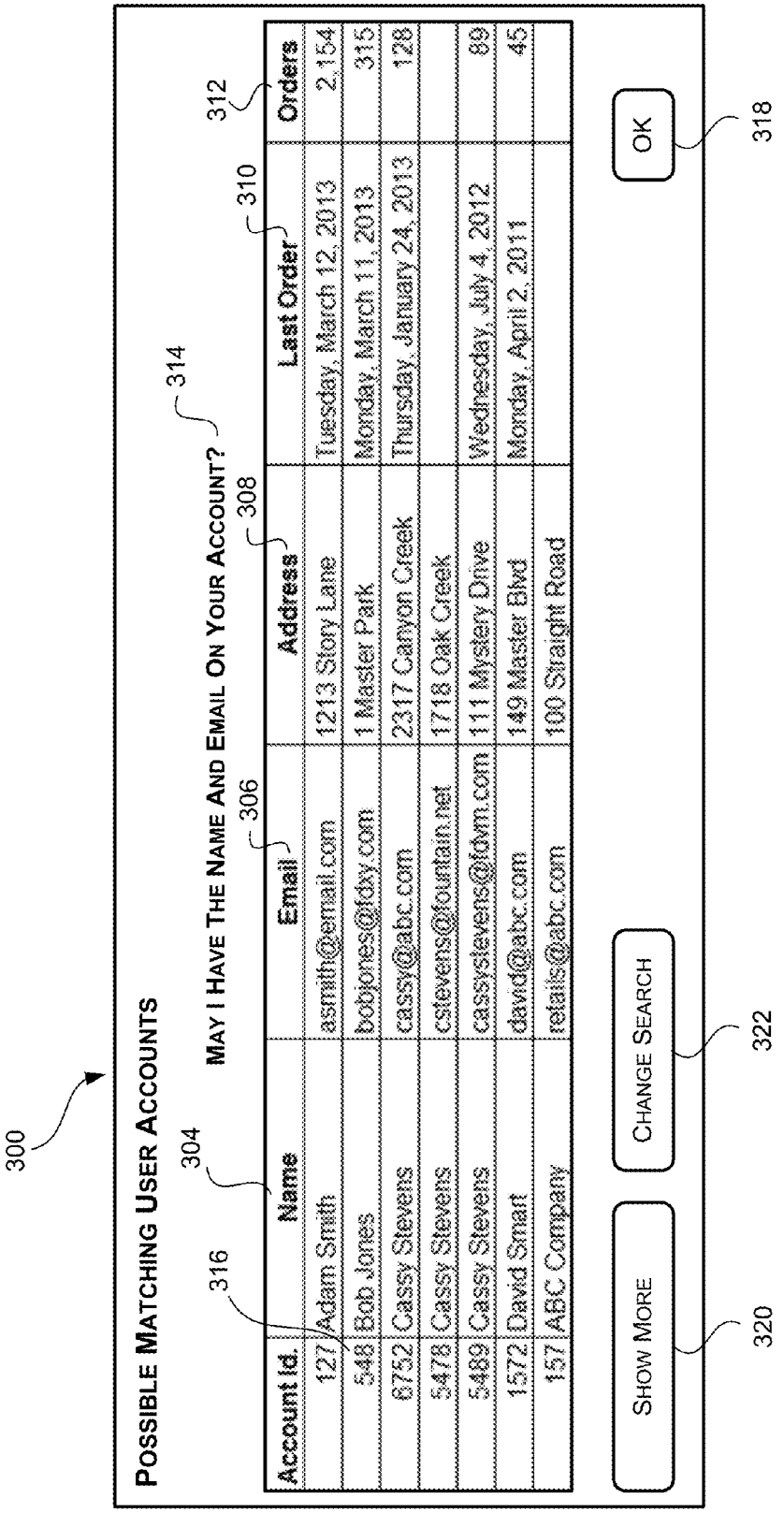
300
POSSIBLE MATCHING USER ACCOUNTS
MAY I HAVE THE NAME AND EMAIL ON YOUR ACCOUNT?
304
306
308
310
312
314
316
Account Id.
Name
Email
Address
Last Order
Orders
127 Adam Smith asmith@email.com 1213 Story Lane Tuesday, March 12, 2013 2,154
548 Bob Jones bobjones@fdxy.com 1 Master Park Monday, March 11, 2013 315
6752 Cassy Stevens cassy@abc.com 2317 Canyon Creek Thursday, January 24, 2013 128
5478 Cassy Stevens cstevens@fountain.net 1718 Oak Creek
5489 Cassy Stevens cassystevens@fdvm.com 111 Mystery Drive Wednesday, July 4, 2012 89
1572 David Smart david@abc.com 149 Master Blvd Monday, April 2, 2011 45
157 ABC Company retails@abc.com 100 Straight Road
SHOW MORE
CHANGE SEARCH
OK
320
322
318

FIG. 3

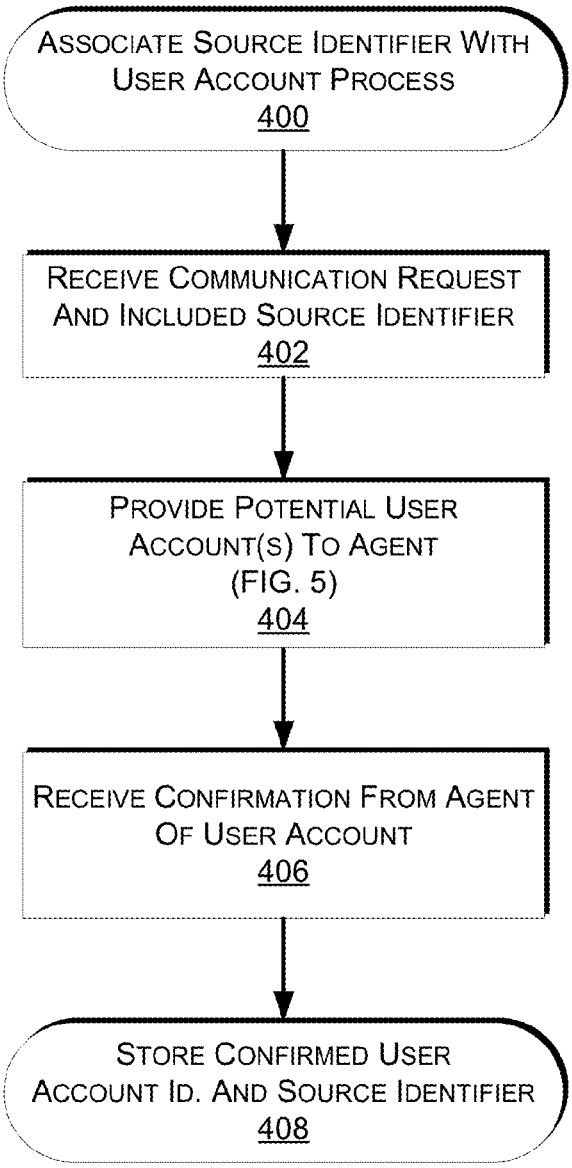
ASSOCIATE SOURCE IDENTIFIER WITH USER ACCOUNT PROCESS
400
RECEIVE COMMUNICATION REQUEST AND INCLUDED SOURCE IDENTIFIER
402
PROVIDE POTENTIAL USER ACCOUNT(S) TO AGENT (FIG. 5)
404
RECEIVE CONFIRMATION FROM AGENT OF USER ACCOUNT
406
STORE CONFIRMED USER ACCOUNT ID. AND SOURCE IDENTIFIER
408

FIG. 4

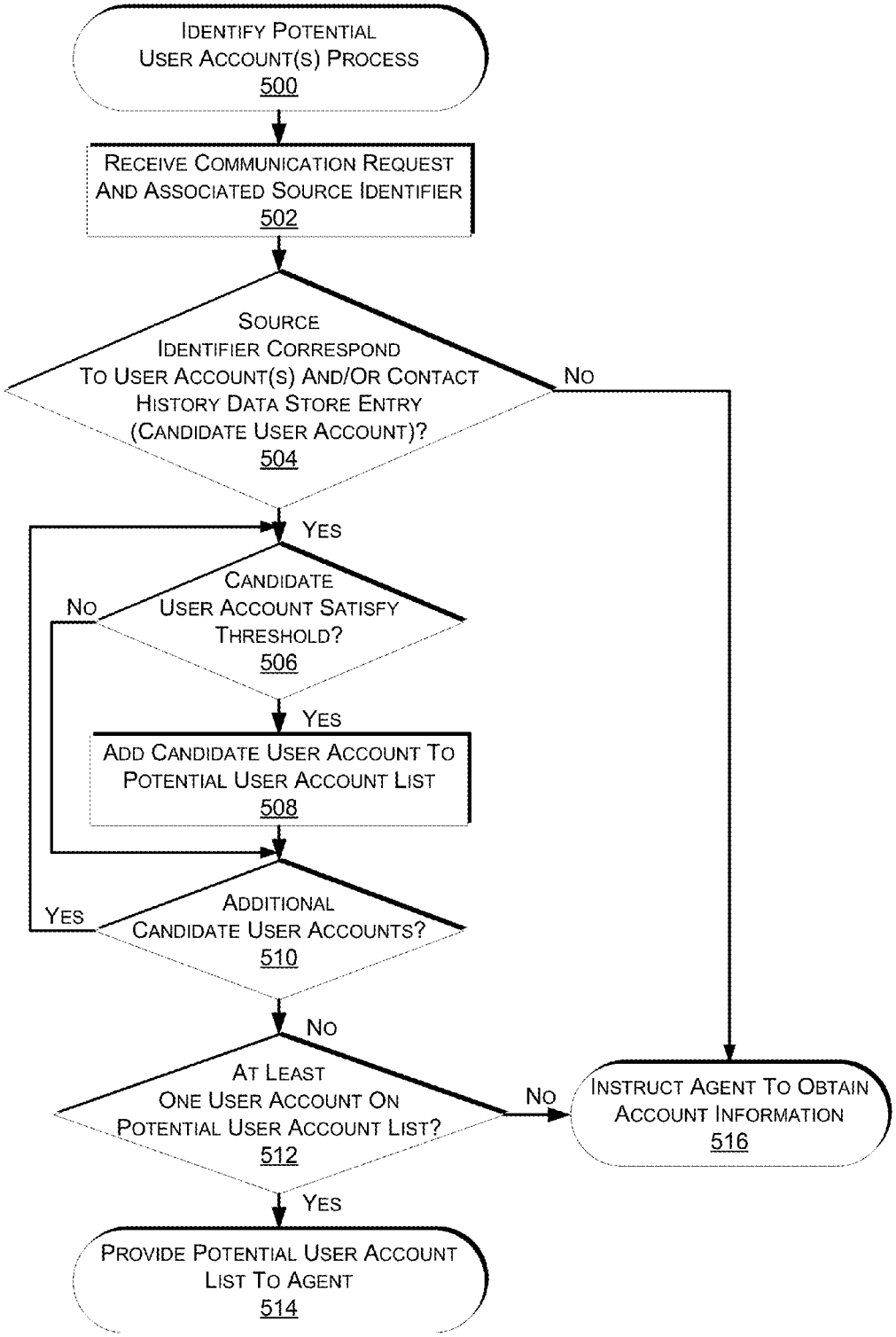
IDENTIFY POTENTIAL USER ACCOUNT(S) PROCESS
500
RECEIVE COMMUNICATION REQUEST AND ASSOCIATED SOURCE IDENTIFIER
502
SOURCE IDENTIFIER CORRESPOND TO USER ACCOUNT(S) AND/OR CONTACT HISTORY DATA STORE ENTRY (CANDIDATE USER ACCOUNT)?
504
NO
YES
CANDIDATE USER ACCOUNT SATISFY THRESHOLD?
506
NO
YES
ADD CANDIDATE USER ACCOUNT TO POTENTIAL USER ACCOUNT LIST
508
ADDITIONAL CANDIDATE USER ACCOUNTS?
510
YES
NO
AT LEAST ONE USER ACCOUNT ON POTENTIAL USER ACCOUNT LIST?
512
NO
INSTRUCT AGENT TO OBTAIN ACCOUNT INFORMATION
516
YES
PROVIDE POTENTIAL USER ACCOUNT LIST TO AGENT
514

FIG. 5

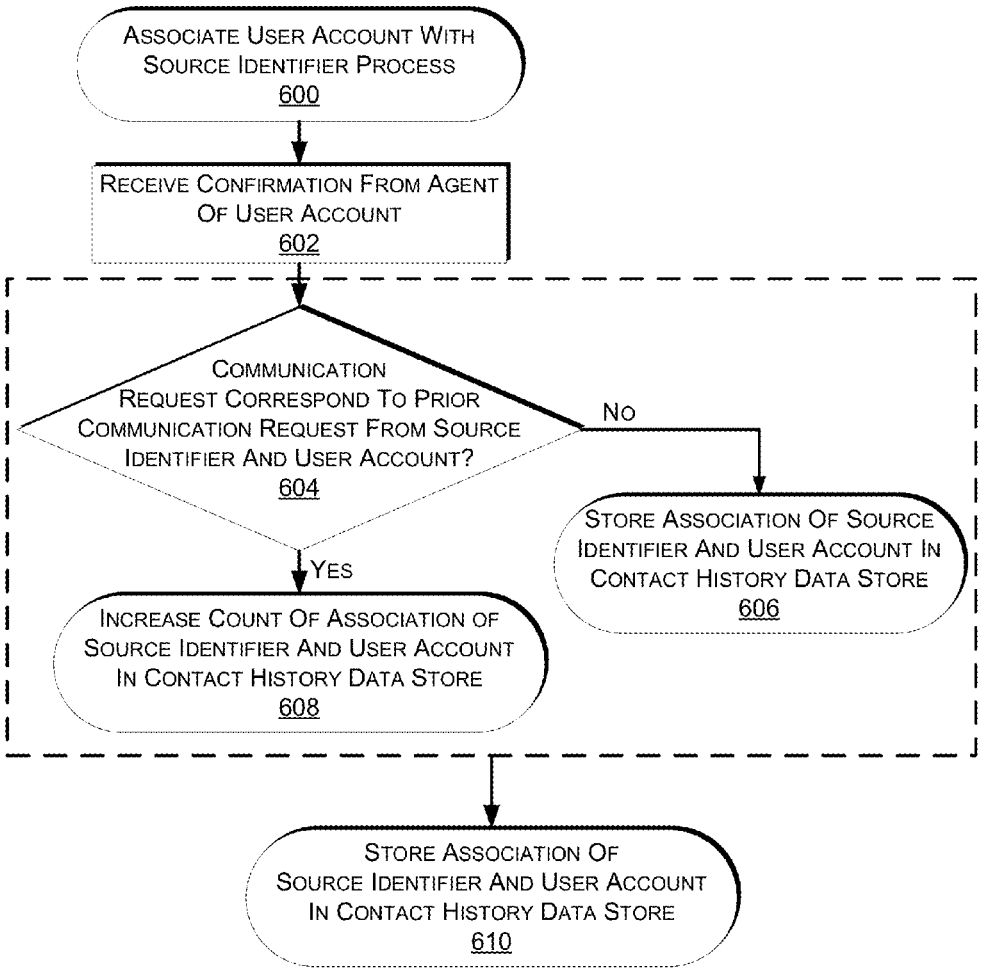
ASSOCIATE USER ACCOUNT WITH SOURCE IDENTIFIER PROCESS
600
RECEIVE CONFIRMATION FROM AGENT OF USER ACCOUNT
602
COMMUNICATION REQUEST CORRESPOND TO PRIOR COMMUNICATION REQUEST FROM SOURCE IDENTIFIER AND USER ACCOUNT?
604
NO
YES
STORE ASSOCIATION OF SOURCE IDENTIFIER AND USER ACCOUNT IN CONTACT HISTORY DATA STORE
606
INCREASE COUNT OF ASSOCIATION OF SOURCE IDENTIFIER AND USER ACCOUNT IN CONTACT HISTORY DATA STORE
608
STORE ASSOCIATION OF SOURCE IDENTIFIER AND USER ACCOUNT IN CONTACT HISTORY DATA STORE
610

FIG. 6

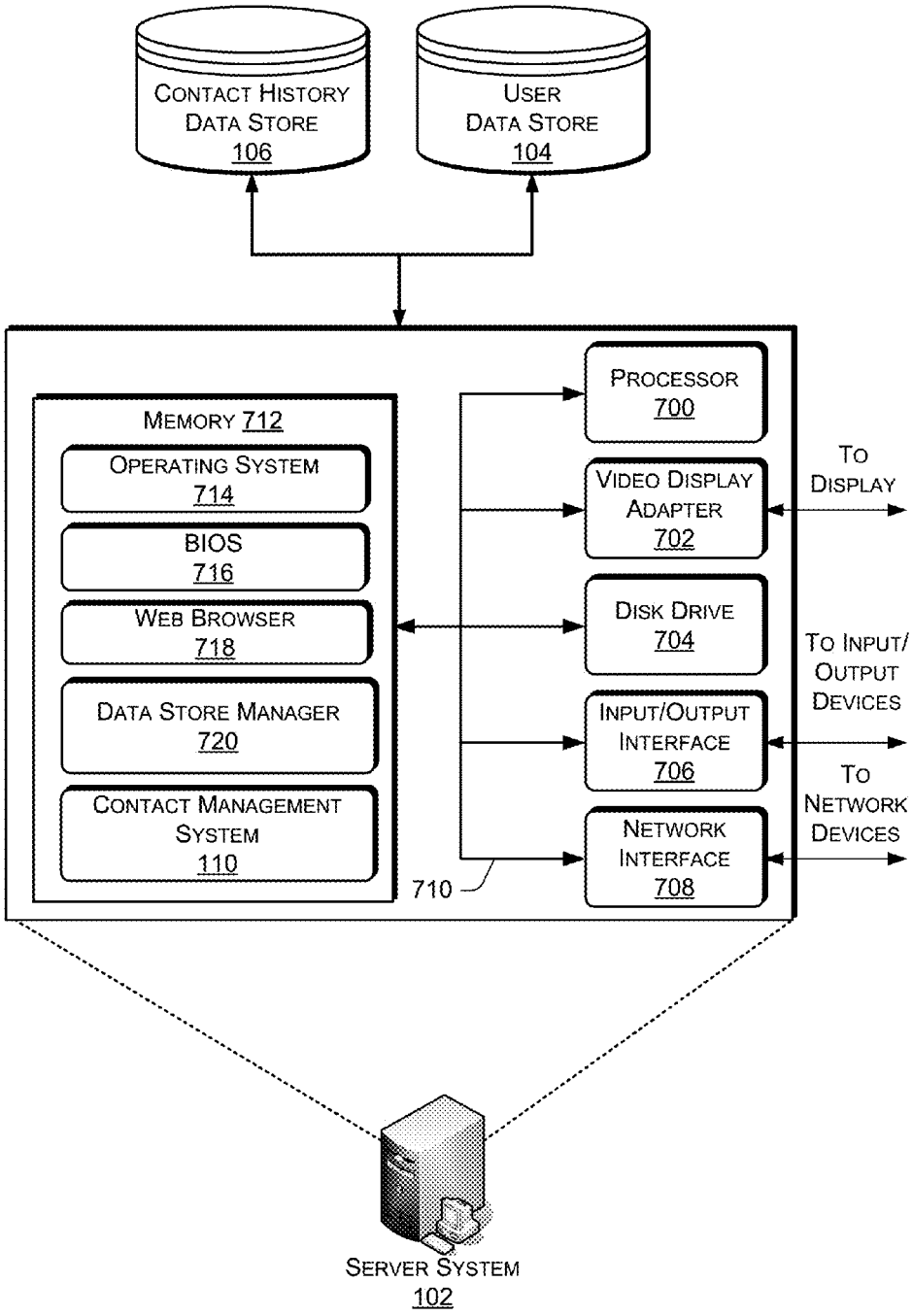
CONTACT HISTORY DATA STORE 106
USER DATA STORE 104
MEMORY 712
OPERATING SYSTEM 714
BIOS 716
WEB BROWSER 718
DATA STORE MANAGER 720
CONTACT MANAGEMENT SYSTEM 110
710
PROCESSOR 700
VIDEO DISPLAY ADAPTER 702
DISK DRIVE 704
INPUT/OUTPUT INTERFACE 706
NETWORK INTERFACE 708
TO DISPLAY
TO INPUT/ OUTPUT DEVICES
TO NETWORK DEVICES
SERVER SYSTEM 102

FIG. 7

# ASSOCIATING USER ACCOUNTS WITH SOURCE IDENTIFIERS

## BACKGROUND

Many retailers, businesses, and other customer dependent entities often provide support networks, such as call centers, that allow customers to contact the entity. For example, many product manufacturers maintain call centers through which customers (e.g., businesses selling their products, customers using their products) can contact the company to obtain support. One of the difficulties with such support networks is in identifying the user or customer that is contacting the entity. For example, many support networks require customers to verify their identity by providing their name, mailing address, email address, etc. This can often be difficult for both the customer and the agent working in the support network due to the difficulty in spelling out the words necessary to complete verification.

## BRIEF DESCRIPTION OF THE DRAWINGS

The detailed description is set forth with reference to the accompanying figures. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears. The use of the same reference numbers in different figures indicates similar or identical items or features.

FIG. **1** is a block diagram illustrating an environment for associating a source identifier with a user account, according to some implementations.

FIG. **2** is a block diagram illustrating information maintained in a contact history data store, according to some implementations.

FIG. **3** is a block diagram illustrating a graphical user interface of possible matching user accounts, according to some implementations.

FIG. **4** depicts a flow diagram of a process for associating a source identifier with a user account, according to some implementations.

FIG. **5** depicts a flow diagram of a process for identifying potential user account(s), according to some implementations.

FIG. **6** depicts a flow diagram of a process for associating a user account with a source identifier, according to some implementations.

FIG. **7** is a block diagram of an illustrative implementation of a server system that may be used with various implementations.

While implementations are described herein by way of example, those skilled in the art will recognize that the implementations are not limited to the examples or drawings described. It should be understood that the drawings and detailed description thereto are not intended to limit implementations to the particular form disclosed, but on the contrary, the intention is to cover all modifications, equivalents and alternatives falling within the spirit and scope as defined by the appended claims. The headings used herein are for organizational purposes only and are not meant to be used to limit the scope of the description or the claims. As used throughout this application, the word "may" is used in a permissive sense (i.e., meaning having the potential to), rather than the mandatory sense (i.e., meaning must). Similarly, the words "include", "including", and "includes" mean including, but not limited to.

## DETAILED DESCRIPTION

This disclosure describes a system for associating user accounts with source identifiers included in communication requests received from users of those user accounts. For example, when a user contacts a support network, such as a call center, the source identifier (e.g., telephone number) may be identified. Once the user initiating the communication request is verified and the corresponding user account identified, the source identifier may be associated with the identified user account. By establishing and storing a relationship between the source identifier and the verified user account, if the user later again initiates a communication request that includes the same source identifier, that user's user account may be quickly identified to the agent, thereby simplifying verification. Rather than the user having the specifically spell out any of the verification information, and the agent provide that information to a computing system, the potential matches may be provided and the appropriate one visually verified by the agent.

In some implementations, multiple users may initiate communication requests that include the same source identifier. In other implementations, the source identifier may be associated with multiple user accounts. When a subsequent communication request is received that includes the source identifier, user account information from one or more of the associated user accounts may be provided to an agent to simplify verification and identification of the user.

By maintaining a relationship between source identifiers and user accounts of user's that have initiated communication requests from the source identifiers, agents may be provided with a simplified list of potential user accounts for any future communication request that includes the source identifier. In some implementations, if there are multiple user accounts associated with a source identifier, only a certain percentage (e.g., the most recent, most frequent) may be provided to the agent for verification. In other implementations, user account information for all user accounts associated with a source identifier may be provided.

FIG. **1** is a block diagram illustrating an environment **100** for associating a source identifier with a user account, according to some implementations. As illustrated, one or more users **101-1**, **101-2**, **101-3**, **101-4**, **101-5** may initiate a communication request with a contact management system **110**. For example a user **101-1** may utilize a portable device, such as a cell phone to initiate a communication request with the contact management system **110**. A source identifier, such as the user cell's phone number may be included in the communication request. As utilized herein, a "source identifier" may be any identifying information, such as a phone number, coordinate locations, an internet protocol address, user identifier, unique identifier, and the like.

In other implementations, a user, such as user **101-2**, may initiate a communication request using a computing device, such as a desktop or laptop computer. For example, the user may provide a source identifier (e.g., telephone number) to the server system **102** and request that an agent **108** contact that user at the source identifier. In still other implementations, multiple users **101-3**, **101-4**, **101-5** may, at different times, initiate communication requests that utilize the same source identifier. For example the users **101-3**-**101-5** may all initiate communication requests from an office and the source identifier included in each communication request may be the office telephone number.

The contact management system **110** may receive communication requests from users and search one or more of a user data store **104** and/or a contact history data store **106** for user accounts associated with the corresponding source identifier. As discussed further below, the user data store **104** may include user account information provided by users. Such information may include a billing telephone number (source

identifier) or delivery coordinates (source identifier). The contact history data store **106** may include a list of associations between source identifiers and user accounts from prior communication requests. For example, each time a communication request is received and a user account identified and verified to correspond with a user initiating the communication request, an association between the source identifier and the user account may be included in the contact history data store.

Based on the identified user accounts, the contact management system **110** may provide a list of potential user accounts to an agent **108** for use in identifying the user initiating the communication request. For example, if fifteen prior communication requests have been received that included the source identifier of the current communication request, ten of those prior communication requests had come from user A and five of those communication requests had come from user B, the contact management system **110** may provide to the agent **108** user account information for both user A's user account and user B's user account.

The agent, upon receiving an identification of potential user accounts may then utilize the provided information to simplify the verification of the user initiating the current communication request. For example, the agent **108** may ask the user initiating the communication request to provide a name, e-mail address and/or shipping address. When the user provides the information, rather than the agent **108** having to type in the information they can visually scan the provided potential user account information for a match. If a match is identified, the user can be verified and the appropriate user account provided to the agent **108**. If the user cannot be verified based on the provided potential user account information, the agent **108** may then resort to searching for the user's information using traditional techniques.

The contact management system **110** may also include and/or be implemented on a server system **102**. The server system **102** may be local to an agent **108**, remote from the agent **108**, or any combination thereof. Likewise, the server system **102** may be configured to communicate over a network with the user devices, agent devices and/or a combination thereof.

As illustrated, the server system **102** may be implemented as one or more servers **102**(**1**), **102**(**2**), . . . , **102**(N) and may, in some instances form a portion of a network-accessible computing platform implemented as a computing infrastructure of processors, storage, software, data access, and so forth that is maintained and accessible by components/device of the contact management system **110** via a network such as the Internet. The server system **102** does not require end-user knowledge of the physical location and configuration of the system that delivers the services. Common expressions associated for these remote server systems **102** include "on-demand computing," "software as a service (SaaS)," "platform computing," "network-accessible platform," "cloud services," "data centers," and so forth.

The network may utilize wired technologies (e.g., wires, USB, fiber optic cable, etc.), wireless technologies (e.g., RF, IR, NFC, cellular, satellite, Bluetooth, etc.), or other connection technologies. The network is representative of any type of communication network, including data and/or voice network, and may be implemented using wired infrastructure (e.g., cable, CAT5, fiber optic cable, etc.), a wireless infrastructure (e.g., RF, cellular, microwave, satellite, Bluetooth, etc.), and/or other connection technologies.

The server system **102** may also include a user data store **104**, and/or a contact history data store **106**. As discussed further below, the data stores may include lists, arrays, databases, and other data structures used to provide storage and retrieval of data. Likewise, while the disclosure describes multiple data stores, in some implementations, the data stores may be configured as a single data store or multiple data stores.

The user data store **104** may include information about users, such as user account information, purchase history, browse history, etc. Any type of information may be stored in the user data store **104**. For example, user profile information, such as attributes, name, address, gender, purchase history, social networks and/or friends with which the user interacts, and the like may be stored in the user data store **104**. User information may be provided directly by users, such as when they become employed, collected from users when interacting with the contact management system **110**, etc.

The contact history data store **106** may include a list of associations between source identifiers and user accounts of users verified to be initiating the communication requests. For example the association may include the user account identification, the date and time of the communication request, the number of times the user has initiated a communication request that included the source identifier, etc.

In some implementations, the user data store **104** and/or contact history data store **106** may include one or more CD-RW/DVD-RW drives, hard disk drives, solid-state drives, tape drives, or other storage devices that are utilized to store digital content and information. The server system **102**, separately or together with the user data store **104** and contact history data store **106** may provide a contact history management system **110**.

The organization and operation of the environment **100** described above is given as an example. In other implementations, the environment **100** may be arranged differently and operate differently than described above.

FIG. **2** is a block diagram illustrating information maintained in a contact history data store **106**, according to some implementations. The contact history data **106** store may maintain a list **202** of information identifying associations between source identifiers **204** and user accounts **206** that have initiated communication requests. As discussed further below, each time a communication request is initiated, the user verified and the corresponding user account identified, an association between the source identifier **204** included in the communication request and the user account **206** may be stored in the contact information data store **106**. For example, as illustrated in FIG. **2**, the user account with an account identifier of 127 **208** has been associated with source identifier 555-124-5482 **210**. This association was stored because the user related to the user account with an identifier of 127 initiated a communication request from the source identifier 555-124-5482 and the agent **108** was able to verify the identity of the user.

In some implementations, additional information about the association, the user account **206** and/or the source identifier **204** may also be maintained in the contact history data store **106**. For example, the date of the initiation of the communication request **212**, time of the initiation of the communication request **214** and/or the frequency or count **216** of the number of times a communication request has been received from the source identifier for the user has been received. In other implementations, fewer, additional, and/or different information may be maintained in the contact history data store **106**. For example, the duration of each communication request, the agent involved in each communication request, notes entered by an agent, and/or results of the communication request may also be maintained in the contact history data store **106**.

FIG. **3** is a block diagram illustrating a graphical user interface **300** of possible matching user accounts, according to some implementations. As illustrated in FIG. **3**, once the contact management system **110** has identified potential user accounts (discussed below), the contact management system **110** may present to an agent a potential user account list **302**. The agent **108** may utilize the information included in the potential user account list **302** to assist in identification and verification of the user that initiated the communication request. For example, the potential user account list **302** may identify the user name **304**, email address **306**, address **308**, last order date **310** and/or number of orders **312** for each potential user account. The agent may then ask a verification question **314**, such as "May I have the name and email on your account?" When the user provides the information, rather than the agent having to input it into the contact management system **110**, the agent can review the account information provided for the potential user accounts and select the appropriate account. For example, if the user identifies themself as "Bob Jones" with an email address of "bobjones@fdxy.com" the agent can visually identify the appropriate user account based on the provided user account information. In this instance the agent **108** would select the user account **316** associated with the user Bob Jones and select the "OK" control **318**.

Upon identifying the appropriate user account, the agent may be provided with additional user account information, such as order history, to assist in responding to the user. In some instances, the agent **108** may utilize some of the information to further verify the user. Once the identity of the user has been verified, the contact management system **110** may generate an association between the source identifier and the user account and store that information in the contact history data store **106**.

If the agent **108** is not able to identify the appropriate user account based on the provided potential user account list, the agent **108** may select the "Show More" **320** control to view additional potential user accounts associated with the source identifier. As discussed further below, in some implementations, not all of the user accounts associated with the source identifier are initially displayed to the agent **108**. Upon selecting the "Show More" **320** control, information for additional potential user accounts may be presented to the agent **108** via the user interface **300**.

Likewise, the agent **108** may select to search for other user accounts by selecting the "Change Search" **322** control. Upon selecting the "Change Search" **322** control, the agent **108** may initiate a search for the user account using traditional techniques.

FIG. **4** depicts a flow diagram of a process **400** for associating a source identifier with a user account, according to some implementations. The process of FIG. **4** and each of the other processes discussed herein may be implemented in hardware, software, or a combination thereof. In the context of software, the described operations represent computer-executable instructions stored on one or more computer-readable media that, when executed by one or more processors, perform the recited operations. Generally, computer-executable instructions include routines, programs, objects, components, data structures, and the like that perform particular functions or implement particular abstract data types.

The computer-readable media may include non-transitory computer-readable storage media, which may include hard drives, floppy diskettes, optical disks, CD-ROMs, DVDs, read-only memories (ROMs), random access memories (RAMs), EPROMs, EEPROMs, flash memory, magnetic or optical cards, solid-state memory devices, or other types of storage media suitable for storing electronic instructions. In addition, in some implementations the computer-readable media may include a transitory computer-readable signal (in compressed or uncompressed form). Examples of computer-readable signals, whether modulated using a carrier or not, include, but are not limited to, signals that a computer system hosting or running a computer program can be configured to access, including signals downloaded through the Internet or other networks. Finally, the order in which the operations are described is not intended to be construed as a limitation, and any number of the described operations can be combined in any order and/or in parallel to implement the process.

The example process **400** begins upon receipt of a communication request that includes a source identifier, as in **402**. The communication request may be received from any communication source, such as a land-line telephone, cellular telephone, Voice-over-Internet-Protocol ("VoIP"), etc. For example, the contact management system **110** may provide a contact number (e.g., toll-free telephone number) that a user can dial to initiate a communication request with the contact management system **110**. When the communication request is received, a source identifier is included. For example, many communication networks provide a source identifier (e.g., source telephone number) in the communication request. In other implementations, other forms of source identifiers may be included in the communication request. For example, the source identifier may be a coordinate location, or a range (e.g., 100 yards) associated with the coordinate location. In still other examples, the communication request may include multiple source identifiers. For example, the communication request may include both a telephone number and an IP address.

Upon receiving a communication request, one or more potential user account(s) that have been associated with the source identifier are provided to an agent, as in **404**. Identification of potential user accounts is discussed in further detail below with respect to FIG. **5**. The agent may then use the potential user account list to assist in identifying the user that initiated the communication request. For example, the agent may ask the user a series of questions and compare responses with information provided in the potential user account list to verify the identity of the user. If the user does not correspond with one of the user accounts, or if there were no potential user accounts identified for the source identifier, the agent may identify the user utilizing traditional techniques.

Once identified, the agent provides, and the process **400** receives, the identification of the user account of the user initiating the communication, as in **406**. Upon receiving confirmation of the user account, and association between the source identifier and the confirmed user account is established and stored in the contact management data store, as in **408**.

FIG. **5** depicts a flow diagram of a process **500** for identifying potential user account(s), according to some implementations. The example process **500** begins upon receipt of a communication request and an included source identifier, as in **502**. Upon receiving a communication request with a source identifier, a determination is made as to whether the source identifier corresponds to a user account(s) and/or a contact history data store entry (collectively referred to herein as "candidate user account"), as in **504**. A source identifier may be part of a user account if, for example, the user has identified the source identifier. For example, if a user provides the source identifier as a contact number, or other identifier that is included in the user account, that source identifier will be located and the user account identified. Likewise, as discussed above with respect to FIG. **4**, once a user account is

verified, it is associated with the source identifier and stored in the contact history data store.

The example process **500** may search both the user data store **104** and the contact history data store **106** for the source identifier and any corresponding accounts may be identified. In alternative embodiments, only the contact history data store may be searched.

If it is determined that the source identifier does correspond with one or more candidate user accounts, a determination is made for a candidate user account as to whether it satisfies a threshold. A threshold may be established to limit the number of potential user accounts identified to an agent to only those that have a higher probability of being the user account for the user that is initiating the communication request. For example, the threshold may be established such that only user accounts associated with a particular percentage of the communication requests from the source identifier satisfy the threshold. To illustrate, the threshold may be established such that 30% or more of the communication requests for the source identifier are associated with the user account. If there are one hundred prior communication requests from the source identifier, 50 of which are associated with user account A, 30 with user account B, and 20 with user account C, the threshold may only be satisfied for user accounts A and B.

It will be appreciated that the threshold may be any percentage or number. Likewise, the threshold may vary depending on the number of user accounts identified, the agent, and/or any other factor. In some implementations, the threshold may only be applied if there are over a defined number of candidate user accounts identified. For example, the threshold may only be applied if more than ten candidate user accounts are identified. In still other implementations, the threshold may be zero (or not applied at all) such that all candidate accounts satisfy the threshold.

In still other implementations, the count may be weighted. For example, when determining if the threshold has been satisfied, more recent communication requests may be given more weight than older communication request. Likewise, more recent user account activity may also be considered. For example, if user A has recently ordered and item, that user's account may be given more weight than another account that has had no recent activity.

If the candidate user account satisfies the threshold, it is added to a potential user account list, as in **508**. Upon adding the user account to the potential user account list, or if it is determined that the candidate user account does not satisfy threshold, a determination is made as to whether additional candidate user accounts exist for consideration, as in **510**. If there are additional candidate user accounts to consider, the example process **500** returns to block **506** and continues. However, if all candidate accounts have been considered, a determination is made as to whether at least one user account has been added to the potential user account list, as in **512**.

If at least one user account has been included in the potential user account list, the potential user account list is provided to an agent, as in **514**. However, if it is determined that no potential user accounts were identified and/or if it is determined at decision block **504** that there are no user accounts and/or contact history data store entries for the source identifier, the example process **500** may instruct the agent to obtain account information and verify the user utilizing traditional techniques, as in **516**.

FIG. **6** depicts a flow diagram of a process **600** for associating a user account with a source identifier, according to some implementations. The example process **600** begins upon receiving a confirmation from an agent of a user account that corresponds with a user that initiated a communication request, as in **602**. Upon receiving the confirmation, a determination is made as to whether the communication request corresponds with a prior communication request from the source identifier and user account, as in **604**. If it is determined that the communication request does correspond with a prior communication request from the source identifier for the user account, a count of the association between the source identifier and the user account may be increased and stored in the contact history data store, as in **608**. If it is determined that there is no prior stored association between the source identifier and the user account, the example process stores an association between the source identifier and the user account in the contact history data store, as in **606**.

In an alternative implementation, rather than processing the blocks **604-608**, the example process may simply store an association of the source identifier and user account in the contact history data store, as in **610**. In such an implementation, rather than maintaining a count for the association, each time the same user account initiates a communication request from the same source identifier it is added to the contact history data store. When future communication requests are received from the source identifier each entry is identified and a count determined.

FIG. **7** is a pictorial diagram of an illustrative implementation of a server system, such as the server system **102**, that may be used in the implementations described herein. The server system **102** may include a processor **700**, such as one or more redundant processors, a video display adapter **702**, a disk drive **704**, an input/output interface **706**, a network interface **708**, and a memory **712**. The processor **700**, the video display adapter **702**, the disk drive **704**, the input/output interface **706**, the network interface **708**, and the memory **712** may be communicatively coupled to each other by a communication bus **710**.

The video display adapter **702** provides display signals to a local display (not shown in FIG. **7**) permitting an operator of the server system **102** to monitor and configure operation of the server system **102**. The input/output interface **706** likewise communicates with external input/output devices not shown in FIG. **7**, such as a mouse, keyboard, scanner, or other input and output devices that can be operated by an operator of the server system **102**. The network interface **708** includes hardware, software, or any combination thereof, to communicate with other computing devices. For example, the network interface **708** may be configured to provide communications between the server system **102** and other computing devices, such as an agents computing device and/or a user's computing device, as shown in FIG. **1**.

The memory **712** generally comprises random access memory (RAM), read-only memory (ROM), flash memory, and/or other volatile or permanent memory. The memory **712** is shown storing an operating system **714** for controlling the operation of the server system **102**. A binary input/output system (BIOS) **716** for controlling the low-level operation of the server system **102** is also stored in the memory **712**.

The memory **712** additionally stores program code and data for providing network services that allow other computing devices to communicate with the contact management system **110**. Accordingly, the memory **712** may store a browser application **718**. The browser application **718** comprises computer executable instructions, that, when executed by the processor **700** generate or otherwise obtain configurable markup documents such as Web pages. The browser application **718** communicates with a data store manager application **720** to facilitate data exchange between the user data store **104** and the contact history data store **106**.

As used herein, the term "data store" refers to any device or combination of devices capable of storing, accessing and retrieving data, which may include any combination and number of data servers, databases, data storage devices and data storage media, in any standard, distributed or clustered environment. The server system **102** can include any appropriate hardware and software for integrating with the data stores **104-106** as needed to execute aspects of one or more applications for the contact management system **110**.

The data stores **104-106** can include several separate data tables, databases or other data storage mechanisms and media for storing data relating to a particular aspect. For example, the data stores **104-106** illustrated include mechanisms for user information, contact history information, etc. which can be used to generate and deliver information to agents **108** and/or users.

It should be understood that there can be many other aspects that may be stored in the data stores **104-106**. The data stores **104-106** are operable, through logic associated therewith, to receive instructions from the server system **102** and obtain, update or otherwise process data in response thereto.

In addition to maintaining information about users and contact history, the contact history management system **110** may provide use information, such as contact history to the agents **108**. For example, the contact history management system **110**, through communication between the server system **102** and a computing device of an agent **108**, may provide contact history information and/or user account information to an agent identifying potential user accounts of a user initiating a communication request.

The memory **712** may also include the contact history management system **110**, discussed above. The contact history management system **110** may be executable by the processor **700** to implement one or more of the functions of the server system **102**. In one implementation, the contact history management system **110** may represent instructions embodied in one or more software programs stored in the memory **712**. In another implementation, the contact history management system **110** can represent hardware, software instructions, or a combination thereof.

The server system **102**, in one implementation, is a distributed environment utilizing several computer systems and components that are interconnected via communication links, using one or more computer networks or direct connections. However, it will be appreciated by those of ordinary skill in the art that such a system could operate equally well in a system having fewer or a greater number of components than are illustrated in FIG. **7**. Thus, the depiction in FIG. **7** should be taken as being illustrative in nature and not limiting to the scope of the disclosure.

Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described. Rather, the specific features and acts are disclosed as exemplary forms of implementing the claims.

What is claimed is:

**1**. A computer-implemented method for identifying a user account from source information, comprising:

under control of one or more computing systems configured with executable instructions,

receiving a communication request including:

a source identifier having a coordinate location or a telephone number; and

a request that a telephone call be initiated to the telephone number, wherein the communication request is initiated from a computing device, and wherein the source identifier of the communication request includes the telephone number for a device other than the computing device; and

determining a plurality of potential user accounts based at least in part on:

a source identifier of a verified prior communication request, wherein the verified prior communication request was previously verified as being associated with at least one of the potential user accounts based at least in part on a confirmation input by a human agent; and

the coordinate location or the telephone number of the source identifier of the communication request; and

providing based at least in part on the plurality of potential user accounts, a listing for display to a second human agent for selecting a user account associated with the communication request, wherein the listing includes:

at least one potential user account of the plurality of the potential user accounts; and

user account information for the at least one potential user account of the plurality of potential user accounts.

**2**. The computer-implemented method of claim **1**, further comprising:

determining that a plurality of prior communication requests have been received that include the source identifier; and

determining that a percentage of the prior communication requests are associated with the at least one potential user account, wherein providing the listing for display to the second human agent is further based at least in part on the determination that the percentage of the prior communication requests are associated with the at least one potential user account.

**3**. The computer-implemented method of claim **2**, wherein the percentage exceeds a threshold.

**4**. The computer-implemented method of claim **1**, wherein the user account information of each potential user account includes a user name and at least one of a last order date, an address, or a number of orders.

**5**. The computer-implemented method of claim **1**, wherein providing the listing is further based at least in part on one of:

a date of the verified prior communication request; or

an activity date associated with one of the potential user accounts.

**6**. The computer-implemented method of claim **1**, wherein providing the listing is further based at least in part on a count of a number of associations between the source identifier and one of the potential user accounts of the plurality of potential user accounts.

**7**. A computing system comprising:

one or more processors; and

a memory coupled to the one or more processors and storing program instructions that when executed by the one or more processors cause the one or more processors to at least:

receive a communication request, the communication request including a source identifier, wherein the source identifier comprises at least one of a coordinate location or a telephone number, and wherein the communication request includes a request that a telephone call be initiated to the telephone number, wherein the communication request is initiated from a computing device, and wherein the source identifier of the com-

munication request includes the telephone number for a device other than the computing device;

identify a user account associated with the source identifier, wherein the user account is associated with the source identifier based at least in part on a prior communication request including the source identifier;

verify the source identifier as being associated with the user account based at least in part on a confirmation input by a human agent; and

provide user account information of the user account to a second human agent.

**8**. The computing system of claim **7**, the program instructions that when executed by the one or more processors further cause the one or more processors to at least associate the user account with the source identifier in response to receiving a confirmation by the second human agent that the user account corresponds to a user initiating the communication request.

**9**. The computing system of claim **7**, wherein the user account information is provided in a potential user account list.

**10**. The computing system of claim **9**, wherein the potential user account list includes user account information of a plurality of user accounts.

**11**. The computing system of claim **7**, the program instructions that when executed by the one or more processors further cause the one or more processors to:

determine if a count of prior communication requests including the source identifier and associated with the user account exceeds a threshold.

**12**. The computing system of claim **11**, the program instructions that when executed by the one or more processors further cause the one or more processors to:

based at least in part on a determination that the threshold has been exceeded, including the user account on a potential user account list; and

wherein the user account information of the user account is provided to the second human agent as part of the potential user account list.

**13**. The computing system of claim **11**, wherein the threshold is:

a percentage of prior communication requests including the source identifier and associated with the user account; or

a number of prior communication requests including the source identifier and associated with the user account.

**14**. The computing system of claim **7**, wherein account information corresponding to a plurality of user accounts is provided to the second human agent.

**15**. The computing system of claim **14**, wherein each of the plurality of user accounts includes an association with the source identifier.

**16**. A method for identifying a user account from source information of a communication request, the method comprising:

under control of one or more computing devices configured with executable instructions,

receiving a communication request including a source identifier, wherein the source identifier comprises at least one of a coordinate location or a telephone number, and wherein the communication request includes a request that a telephone call be initiated to the telephone number;

identifying a user account of a user initiating the communication request based at least in part on a verified prior communication request that includes the source identifier, wherein the verified prior communication request was previously verified as being associated with the user account based at least in part on a confirmation input by a human agent;

providing user account information of the user account to a second human agent;

associating the source identifier and the user account; and

storing the association of the source identifier and the user account.

**17**. The method of claim **16**, wherein identifying a user account further comprises:

associating the source identifier and the user account subsequent to receiving a confirmation input from the second human agent.

**18**. The method of claim **17**, wherein the confirmation input from the second human agent is received subsequent to the second human agent verifying an identity of a user initiating the communication request.

**19**. The method of claim **16**, wherein storing the association of the source identifier and the user account includes:

determining that the association of the source identifier and the user account has previously been stored; and

increasing a count indicative of a number of associations between the source identifier and the user account that has previously been stored.

**20**. The method of claim **16**, wherein storing the association of the source identifier and the user account includes:

modifying a list of associations between source identifiers and user accounts.

**21**. The method of claim **16**, wherein the communication request is initiated from a computing device, and wherein the source identifier of the communication request includes the telephone number for a device other than the computing device.

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